Claims

1. "Process used to obtain cellulosic wet sheet" **characterized** by the following steps:

a) heating a solution containing 0.2 to 12 % of glucose mass and 0.1 to 7 % of yeast extract in water that was filtered through sand and activated charcoal, in a sanitary stainless steel mixer with a steam heated jacket, at a temperature of 125° C for 15 minutes, for sterilization purposes;

b) cooling the solution till it reaches a temperature between 5 and 30° C;

c) adding 0.5 to 5% of ethanol and of 2 to 50% of the inoculum Acetobacter xylinum, followed by agitation of the solution until it is homogenized;

d) transferring the solution to covered fermentation trays where it must rest for 16 to 240 hours, at a temperature between 5 and 30°C;

e) collecting the cellulose wet sheets that are thus formed, varying from 0.25 to 200 mm in thickness;

f) forwarding the wet sheets to the whirlpool tank, where they are purified and whitened, according to the following sequence: rinsing, washing with sodium hydroxide 1 to 5%, rinsing, washing with 1 to 5% sodium lauryl sulfate and final rinsing;

g) packaging the wet sheets for shipping.

2. "Process used to obtain cellulosic membrane" from the wet sheet as described in claim 1, **characterized** by the following steps:

h) in one of the extremities of the wet sheet, two rectangles of an absorbent material are applied by pressure (one to each side of the wet sheet), so as to obtain a semi-rigid end that will not adhere to the drying material during this process;

i) this extremity is inserted in the drying equipment through an idling roller and introduced between two pairs of draining cylinders, and from there to a pair of conveyor belts, being pressed between these belts with increasing force (from 0.5 to 8kgf/cm2) that is applied by a series of small rollers heated by the hot water that circulates in their axles; from there it goes to a pair of finishing cylinders, which may or may not be heated, so as to ensure a smooth surface for the membrane;

j) the membrane formed by the drying of the wet sheet is forwarded to a coiling device, where the product is coiled and stands ready for sterilization and/or shipping.

3. Process used to obtain cellulosic wet sheet according to claim 1, **characterized** by optionally comprising a step where screens or other artifacts of diverse materials are added to the surface of the wet sheet already pre-formed; then this set rests for another period of time that may vary from 16 to 240 hours at a temperature between 5 and 30° C followed by the collecting of the compound cellulose wet sheets thus formed varying from 0.25 to 40 mm in thickness;

4. "Culture medium" used in the process in claim 1, **characterized** by containing water filtered; 0.2 to 12 % of glucose mass; 0.1 to 7 % of yeast extract; and 0.5 to 5% of ethanol.

5. "Fermentation tray" used in the process in claim 1, **characterized** by its consisting of a tray (11) with a double wall (12) and a covering (13); made of non-adherent material, preferably fiberglass with a reinforced structure. Said tray walls are 2 to 3 mm thick and form a duct where water circulates in order to keep the temperature at the ideal point for fermentation.

6. Fermentation tray according to claim 5, **characterized** by the fact that the tray covering (13) is made of the same material of the tray (11) and is embedded in the set, said tray covering consists of modules bonded together by rubber, preferably nitrile, thus allowing the liquid medium to be loaded into the tray by raising only the first and smaller module, reducing the exposure of the medium to contamination.

7. Equipment used to obtain the membrane, according to the process in claim 2, **characterized** by its consisting of:

- a black steel plate (1) structure of appropriate thickness, forming a box with a lid (2) that is normally closed and, for the purpose of ensuring the operator's safety, is provided with a power switch that arrests the motor when the lid is not totally shut, and an idling roller (3) coated with an absorbent material.
- two pairs (4 and 4') of draining cylinders made of stainless steel coated with an absorbent material, 20 cm in diameter and 30 cm in width, where the upper cylinder (4) of the first pair is provided with a foot-actuated lifting mechanism (5) and a lever system designed to permit the initial positioning of the wet sheet between the two cylinders;
- two pairs (6 and 6') of stainless steel driving cylinders, 20 cm in diameter and 30 cm in width, with roller bearings, where the cylinders numbered (6) are not powered and the cylinders numbered (6') are powered with a speed varying from 15 to 60 RPM;
- two felt (or any other water absorbing material) continuous conveyor belts measuring 2 m by 30 cm that are moved by the cylinders (6'); as well as two rollers (7) to control the tension on the belts, also made of stainless steel, with 10 cm in diameter;
- twelve or more pairs of stainless steel rollers (8, 8'), their external diameters measuring 5 cm each, the bottom ones (8') heated by the passing of hot water or vapor through their axles; each pair of rollers (8, 8') makes it possible to apply increasing pressure to the conveyor belts made of absorbent material;
- a pair of finishing cylinders (9) made of polished stainless steel, 20 cm in diameter and 30 cm long, each exerting pressure on the other, that can be heated by inner circulation of steam or hot water; and
- a coiling device (10) made of carbon steel.

8. "Cellulosic membrane" **characterized** for being inert,

biocompatible and composed of pure cellulose microfibrils produced by microorganisms, randomly arranged, with an ideal weigh somewhere between 10 and 45 g/m2, being said membrane permeable to gases and impermeable to liquids.

9. "Process used to obtain a wet sheet" in accordance with claim 1, **characterized** by the fact that all effluents are recovered and treated before they are reused or disposed of in the sewer system.

10. "Process used to obtain a wet sheet" in accordance with claim 1, **characterized** by the fact that the wet sheet obtained is made of randomly arranged pure cellulose microfibrils with a great capacity to retain liquids, keeping the humidity retained in its structure in excess of 90%, and that said wet sheet is cartilage-like and of a whitish color.

11. Process used to obtain a wet sheet in accordance with claim 1, **characterized** by the fact that the sheets obtained resist high temperatures and optionally may be submitted to autoclave treatment in liquid medium under high temperature and pressure without suffering any physical changes;

12. Process used to obtain a wet sheet in accordance with claim 1, **characterized** by the fact that the sheets obtained are insoluble in organic solvents, and that they may be processed in blenders, mills or the equivalent, resulting in a thick mass with a great power to retain liquids.

13. Process used to obtain a wet sheet in accordance with claim 1, **characterized** by the fact that the sheets obtained are used as thickening and/or stabilizer in the food and beverage industry.

14. Process used to obtain a wet sheet in accordance with claim 1, **characterized** by the fact that the sheets obtained in the form of a thick mass can be used also in the production of lightweight plates extremely resistant to impact and bullet perforations.

15. Process used to obtain a wet sheet in accordance with claim 14, **characterized** by the fact that said plates are obtained by grinding the wet sheet in a liquid medium, then dehydrating the mass of cellulose microfibrils in such a way as to recast the material to form a plate to be molded as desired as to form and thickness.

16. Process used to obtain a wet sheet in accordance with claim 1, **characterized** by the fact that the sheets obtained are used as thickeners or stabilizers in nonfat milk, juices and food in general; used in the making of artifacts obtained by drying and shaping the wet sheets (compound and not compound alike) in the forms desired for the final product, either pressed or non-pressed; included in the composition of canned foods; used in the production of sweets; and used to obtain extremely thin cellulosic membranes with characteristic properties such as permeability to gases and impermeability to liquids.

17. Process used to obtain a wet sheet in accordance with claim 1, **characterized** by the fact that the sheets obtained, submitted to a fast vacuum drying process or to lyophilization, are transformed in a super absorbent and biocompatible material, a hemostatic both of internal and external use in hospital and surgical applications.

18. Process used to obtain a membrane in accordance with claim 2, **characterized** by the fact that said membrane is composed of pure cellulose microfibrils produced by microorganisms, randomly arranged, with an ideal weigh somewhere between 10 and 45 g/m2.

19. Process used to obtain a membrane in accordance with claim 2, **characterized** by the fact that said membrane is inert and biocompatible, so as not to cause allergic or rejection responses when applied over wounds in live organisms.

20. Process used to obtain a membrane in accordance with claim 2, **characterized** by the fact that said membrane's most distinguished feature is its permeability to gases and impermeability to liquids.

21. Process used to obtain a membrane in accordance with claim 2, **characterized** by the fact that the membranes obtained are used as a device to obtain an environment suitable for "in vivo" culture in the regeneration of tissues in living organisms, both externally and internally, due to their biocompatibility that prevents rejection; as a temporary substitute for the skin, mainly in dermal ulcers, burns, recovery of autograft-donor sites, membrane for ophthalmic use, odontological use, dressings for home use, professional use, veterinary use; as functional material in the making of hospital attire and disposable packaging for medical and nursing instruments whenever a microbial barrier is recommended, and also as thickener to replace sugar, starch, carboxymethylcellulose, and microcrystalline cellulose in the making of medicine tablets; as engineering and safety material, specially as a bulletproof material; and as diaphragm in the production of speakers and earphones.